

**ANALYSIS APPARATUS**

**FIELD OF THE INVENTION**

This invention relates to an analyzer for determining the concentration of one or more substances in a mixture by measuring the concentration-dependent molecule-specific extinction.

**BACKGROUND OF THE INVENTION**

Nondispersive photometers for determining the concentration of a substance in a mixture are widely known and used for a great variety of measuring tasks. Thus, commercial medical measuring instruments for determining CO<sub>2</sub> content in tidal air, so-called capnometers, are based on this principle. These devices evaluate the attenuation of introduced infrared radiation at the wavelength of 4.26 micrometers characteristic of CO<sub>2</sub> according to Lambert-Beer's law

$$I = I_0 \exp [-kCL]$$

where I: Detected intensity  
I<sub>0</sub>: Irradiated intensity  
k: Specific extinction coefficient  
C: Concentration  
L: Optical path length

as a measure of the CO<sub>2</sub> concentration present in the sample.

In the simplest form, nondispersive photometers work according to a single-beam method (See EP 0 794 423 A1).

IR radiation having an intensity assumed to be constant is passed from a radiation source through the volume penetrated by the sample under testing and measured therebehind for its intensity. The measurement

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